Chirurgia (2025) 120: 275-284
No. 3, May - June

http://dx.doi.org/10.21614/chirurgia.3089

Evaluating the Impact of Laparoscopic Gastroplication on Quality of Life and Post-Operative Outcomes in Obese Patients

Mihnea Bogdan Borz[1], Aurelio Pio Russo[1]*, Oliviu Cristian Borz[2,3]

[1]Department of Anatomy, George Emil Palade University of Medicine, Pharmacy, Science, and Technology, Târgu Mureș, Romania
[2]Department of General Surgery, George Emil Palade University of Medicine, Pharmacy, Science, and Technology, Târgu Mureș, Romania
[3]Department of General Surgery, Târgu Mureș County Emergency Clinical Hospital, Târgu Mureș, Romania

***Corresponding author:**
Aurelio Pio Russo, MD
Strada Mihai Viteazul 29
Targu Mures, Romania, 540098
E-mail: draureliopiorusso@gmail.com
ORCID IDs
Mihnea Bogdan Borz: 0000-0002-7361-7031
Aurelio Pio Russo: 0009-0003-7672-2798

Rezumat

Evaluarea impactului gastroplicaturii laparoscopice asupra calității vieții și rezultatelor postoperatorii la pacienții obezi

Introducere: Obezitatea a apărut ca o pandemie globală, manifestându-se prin tulburări metabolice, sociale şi psihologice. Abordările bariatrice tradiționale au fost mult timp piatra de temelie a tratamentului obezității; cu toate acestea, plicatura laparoscopică a marii curburi (LGCP) a câştigat recunoaştere ca o alternativă viabilă şi minim invazivă. *Obiectivul studiului:* Scopul acestui studiu este de a evalua impactul LGCP asupra pierderii în greutate, comorbidităților asociate obezității şi calității vieții la cu Indicele de masă corporală (IMC) ≥35 kg/m².
Materiale şi Metode: A fost realizată o analiză retrospectivă pe 50 de pacienți (45 de femei şi 5 bărbați) care au suferit LGCP. IMC preoperator mediu a fost de 38,71 kg/m². Criteriile de includere au vizat pacienți cu un IMC ≥35 kg/m² cu comorbidități asociate obezității sau ≥40 kg/m², indiferent de prezența comorbidităților. Colectarea datelor preoperatorii şi postoperatorii a inclus măsurători ale IMC, statusul comorbidităților şi calitatea vieții, evaluată prin intermediul chestionarului Bariatric Analysis and Reporting Outcome System (BAROS).
Rezultate: La un an postoperator, procentul mediu de pierdere a excesului de greutate corporală (EBWL%) a atins 64,43%, atingând un vârf de 79,31% la 18 luni, cu o stabilizare la 65,13% la doi ani. IMC-ul mediu a scăzut de la 38,71 kg/m² preoperator la 30,35 kg/m² la doi ani postoperator. Comorbiditățile asociate obezității au prezentat îmbunătățiri semnificative: 15 din 16 pacienți cu dislipidemie şi 10 din 12 cu hiperglicemie au experimentat remisiunea sau ameliorarea afecțiunii, iar toți cei 18 pacienți cu dureri articulare au raportat ameliorarea simptomelor.
Concluzii: LGCP s-a dovedit a fi o procedură bariatrică eficientă, oferind o pierdere semnificativă în greutate şi îmbunătățind condițiile asociate obezității şi calitatea vieții la pacienții cu IMC ≥35 kg/m². În ciuda acestor rezultate favorabile, succesul pe termen lung rămâne dependent de aderența pacienților la modificările stilului de viață şi la ghidurile postoperatorii.

Received: 04.01.2025
Accepted: 30.04.2025

Cuvinte cheie: obezitate, bariatrie, gastroplicatura, QOL

Abstract

Background: Obesity has emerged as a global pandemic, manifesting as metabolic, social, and psychological disorders. Traditional bariatric approaches have long been the cornerstone of obesity treatment; however, laparoscopic greater curvature plication (LGCP) has gained recognition as a viable, minimally invasive alternative.
Aim of the study: The aim of this study is to evaluate the impact of LGCP on weight loss, obesity-related comorbidities, and quality of life in patients with a Body Mass Index (BMI) ≥35 kg/m².
Materials and Methods: A retrospective analysis was conducted on 50 patients (45 women and 5 men) who underwent LGCP. The average preoperative BMI was 38.71 kg/m². Inclusion criteria targeted patients with a BMI ≥35 kg/m² with obesity-related comorbidities or ≥40 kg/m² regardless of comorbidity status. Preoperative and postoperative data collection included BMI measurements, comorbidity status, and quality of life, assessed through the Bariatric Analysis and Reporting Outcome System (BAROS) questionnaire.
Results: At one year postoperatively, the average excess body weight loss percentage (EBWL%) reached 64.43%, peaking at 79.31% at 18 months, with stabilization at 65.13% by the two-year mark. The average BMI decreased from 38.71 kg/m² preoperatively to 30.35 kg/m² at two years postoperatively. Obesity-related comorbidities showed significant improvement: 15 out of 16 patients with dyslipidemia and 10 out of 12 with hyperglycemia experienced resolution or improvement, while all 18 patients with joint pain reported symptom relief.
Conclusions: LGCP has proven to be an effective bariatric procedure, delivering substantial weight loss and improving obesity-related conditions and QOL in patients with a BMI ≥35 kg/m². Despite these favorable outcomes, long-term success remains contingent on patient adherence to lifestyle modifications and postoperative guidelines.

Keywords: obezitate, bariatrie, gastroplicatura, QOL

Introduction

Obesity has emerged as a major global health concern, affecting populations across both developing and developed nations. Its prevalence spans diverse socioeconomic conditions and continues to rise at an alarming rate (1,2).

According to the World Health Organization (WHO), one in eight people worldwide was obese in 2022. Over the past few decades, adult obesity rates have more than doubled since the 1990s, with no sign of slowing. In 2016, over 1.9 billion adults were classified as overweight, including approximately 650 million categorized as obese (1,3).

In Europe, obesity rates vary significantly across regions. Southern and Eastern European countries report the highest obesity prevalence, while Northern and Western Europe exhibit lower rates. A study found that childhood obesity rates ranged from as low as 1.0% in Sweden and Moldova to 5.5% in Malta, with boys consistently exhibiting higher prevalence than girls (4).

Obesity is a chronic metabolic disorder characterized by excessive fat accumulation. While often perceived as a consequence of overnutrition, obesity arises from a complex interplay of biological, environmental, social, and behavioral factors (3). Its increasing prevalence contributes to a growing number of associated morbidities and, in many cases, leads to life-threatening complications (5).

Over the years, quality of life (QoL) assessment has become essential in understanding the impact of chronic diseases on patients. Chronic conditions and their treatments can severely impair QoL by limiting physical activity, causing anxiety, and disrupting daily routines through frequent hospital visits (6). Consequently, improving QoL has become a critical focus in the management of chronic diseases and patient care (6).

Bariatric surgery aims to enhance patients' QoL, extend life expectancy, and reduce obesity-related comorbidities. To evaluate surgical outcomes, the Bariatric Analysis and Reporting Outcome System (BAROS) was developed in 1988, providing a standardized method to assess the effectiveness of treatment (7).

Studies utilizing the BAROS system have demonstrated its effectiveness in assessing the benefits of bariatric surgery. For instance, a single-center retrospective study reported that, according to the BAROS questionnaire, 20% of patients rated their results as excellent, 47% as very good, and 29% as good, highlighting significant improvements in QoL and overall satisfaction (8).

Furthermore, research indicates the use of bariatric-specific QoL questionnaires, like BAROS,

in order to detect more clinically relevant differences compared to generic tools, underlying the importance of throughout assessments in this population (9).

The aim of this study is to evaluate the effectiveness and outcomes of laparoscopic gastroplication as a bariatric surgical procedure for obese patients, focusing on its impact on weight loss, resolution of comorbidities, and quality of life, specifically, for a subgroup of patients with a lower BMI as a cheaper alternative for more complex bariatric surgeries.

Materials and Method

The patients involved in the study were recruited at the Clinic of Surgery II, County Clinical Hospital in Târgu Mureş, Romania, over the period 2018-2021. Each patient was followed for two years at intervals of 3, 6, 12, 18, and 24 months.

The clinical characteristics of patients included in this study were gathered through an initial general examination. Data collected focused on the number of patients, sex, age, weight, Body Mass Index (BMI), Excess Body Weight (EBW), study interval, presence of pre-operative gastric reflux, presence of hiatal hernia, and the average BAROS score. The study involved 50 patients.

The majority of participants were female (45), with 5 male patients. As detailed in *Table 1*, the average age was 38.2 years, and the average pre-operative weight was 91.02 kg. Patients who underwent surgery between 2018 and 2021 were included, with an average pre-operative BMI of 38.71 kg/m² and an EBW of 37.31 kg. Eight patients exhibited pre-operative gastric reflux, and four had hiatal hernia, which was surgically addressed through Toupet or Nissen fundoplication alongside gastroplication.

Weight loss was assessed using Excess Body Weight Loss Percentage (EBWL%) and Total Body Weight Loss Percentage (TBWL%). EBWL% reflects the percentage of excess weight lost following bariatric surgery, while TBWL% measures the total weight loss relative to the patient's initial weight. Both metrics are essential for evaluating intervention effectiveness, with EBWL% providing clinical benchmarks and TBWL% indicating overall progress.

Pre-operative assessments included endocrinological, cardiological, gynecological, and pneumological examinations, abdominal ultrasound, upper gastrointestinal series, and tests for *Helicobacter pylori* and diabetes mellitus.

Table 1. General clinical characteristics of the patients at time of inclusion.

Number of patients	50
Female	45 (90%)
Male	5 (10%)
Mean Age	38.22
Mean Weight	91.02 Kg
Mean BMI	38.71 kg/m²
Mean EBW	37.71 kg
Study interval	2018-2021
Gastric reflux	8
Hiatal hernia	4
Mean BAROS score	8.553

The inclusion criteria in our study were: obese patients with a BMI exceeding 40 kg/m², patients with a BMI exceeding 35 kg/m² with associated comorbidities, patients with a BMI between 30 kg/m² and 35 kg/m² with comorbidities unresponsive to conservative treatments, patients who voluntarily requested the surgery refusing the longitudinal laparoscopic gastrectomy. The exclusion criteria were: age over 60 or below 18, BMI above 50 or below 30, patients with psychiatric conditions, patients with severe heart and respiratory diseases, lack of motivation to follow treatment and a post-operative diet. For the assessment of the patients and for obtaining data, surgical consultations were conducted verifying the inclusion criteria and to confirm the possibility of surgery. Post-operatively, patients completed the BAROS questionnaire.

On the initial consultation, socio-demographic data were collected, and general and specific clinical and paraclinical examinations were conducted. The involved patients signed an informed consent and were constantly updated regarding their involvement in the trial, operating techniques, possible complications, follow-up examinations, and the completion of the BAROS questionnaire for assessing the quality of life.

Among the 50 patients, 28 presented comorbidities associated with obesity, as summarized in *Table 2*. These included hypertension (HTA) in 7 patients, joint pain in 18 patients, hyperglycemia in 12 patients, and dyslipidemia in 16 patients.

Study Design

This retrospective study evaluated quality of life and post-operative outcomes in obese patients who

Table 2. Comorbidities of patients.

Number of patients with comorbidities	28 (56%)
Joint pain	18
Hypertension	7
Hyperglycemia	12
Dyslipidemia	16

underwent laparoscopic gastroplication at the Clinic of Surgery II, County Clinical Hospital in Târgu Mureş. From 2018 to 2021, 71 gastroplication procedures were performed, with 50 cases (45 female and 5 male) meeting inclusion criteria. The outcomes of this study focus on the efficacy of laparoscopic gastroplication, with a detailed analysis of preoperative comorbidities, habits, and body parameters.

Statistical Analysis

The data were analyzed using IBM SPSS v26 software, employing the Mann-Whitney, ANOVA, and Student's t-tests for statistical comparisons. Correlations between groups were assessed using the Pearson correlation test.

Surgical Procedure

Prior to surgery, the patient was positioned in the French lithotomy position, with the primary surgeon standing between the legs and surgical assistants stationed on either side of the patient. The procedure utilized five trocars, with the key optical trocar (10 mm) placed supra-umbilically, two-thirds along the xipho-umbilical line, approximately three finger-widths to the left. The remaining four trocars were strategically placed to ensure optimal access to the cardia and the greater curvature of the stomach. These included: a 5 mm trocar below the xiphoid process, a 5 mm trocar along the same line as the optical trocar but one finger-width to the right, a 10 mm trocar on the left midclavicular line below the costal margin, and a 5mm trocar on the left anterior axillary line, also subcostally.

The initial step involved mobilization of the greater curvature of the stomach, extending to the gastroesophageal junction while preserving the His angle and maintaining at least 5 cm of gastric tissue caudally to the pylorus. Care was taken to leave a sufficient margin along the greater curvature to prevent gastric wall perforation. Special attention was directed toward protecting the spleen during division of the short gastric vessels.

Following mobilization, a 34Fr gastric tube was inserted along the lesser curvature and advanced beyond the pylorus. Gastric calibration was achieved through the creation of a two-layered gastric fold. The first layer of sutures was initiated 2 cm distal to the His angle and continued proximally to 5cm above the pylorus, employing continuous suturing with a non-absorbable 2.0 suture. The procedure was facilitated by the Endo Stitch device and V-Loc sutures. A second row of sutures was placed with the same non-absorbable material, ensuring uniform shaping of the gastric tube with a final diameter of 34-38Fr. The final appearance is presented in *Fig. 1.*

A subset of patients participated in a study utilizing the EndoFlip (Crospon Imaging System) to measure the dimensions and volume of the residual gastric tube intraoperatively (*Fig. 2*). This system employs planimetric impedance to convert voltage measurements into millimeters, accurately

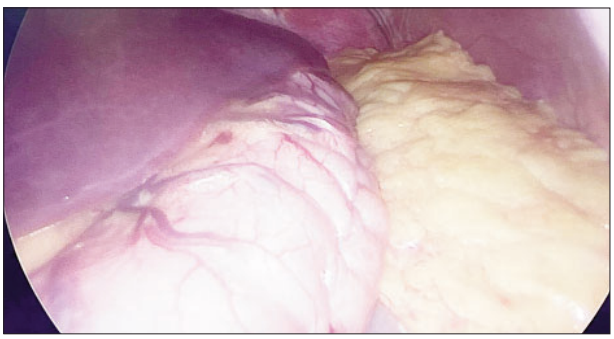

Figure 1. Final appearance after laparoscopic gastric plication. Curvature Plication (LGCP).

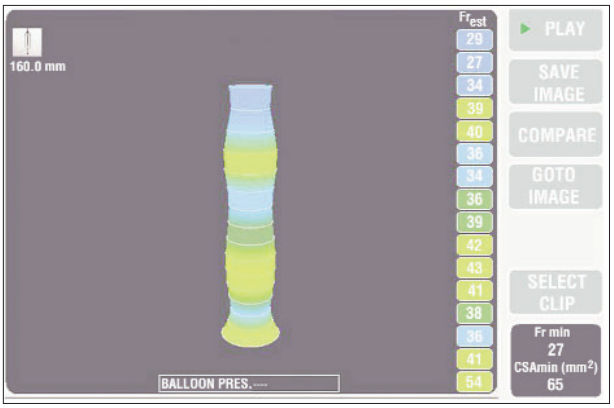

Figure 2. Endoflip system.

mapping the anatomy of the remaining stomach. Results were visually displayed on-screen, providing color-coded diameter representations. Adjustments were made intraoperatively by adding or removing sutures to avoid strictures at the angular incisure or obstructive intragastric folds at the gastroesophageal junction, reducing the need for future corrective procedures. This real-time visualization also allowed for the study of optimal gastric volumes during Laparoscopic Greater.

On the first postoperative day, a Gastrografin swallow test was conducted to assess gastric tube patency and detect potential fistulas. Patients were discharged on the third postoperative day with instructions to continue subcutaneous anticoagulant therapy for one month.

The Nissen or Toupet fundoplication was performed in patients presenting with preoperative hiatal hernia diagnosed during preoperative assessment. In cases where fundoplication was integrated into bariatric surgery, the Nissen procedure was utilized to enhance reflux control by providing a complete 360-degree wrap around the lower esophagus. This approach, combined with laparoscopic greater curvature plication, aimed to improve long-term reflux management, ensure better postoperative outcomes, and reduce the risk of Gastroesophageal Reflux Disease (GERD) recurrence.

The BAROS Questionnaire

QoL assessment in obese patients has become increasingly critical in evaluating postoperative outcomes in bariatric surgery. The Bariatric Analysis and Reporting Outcome System (BAROS) questionnaire (*Fig. 3*), developed in 1998, provides a standardized method for assessing surgical results. It evaluates three main parameters: 1) percentage of

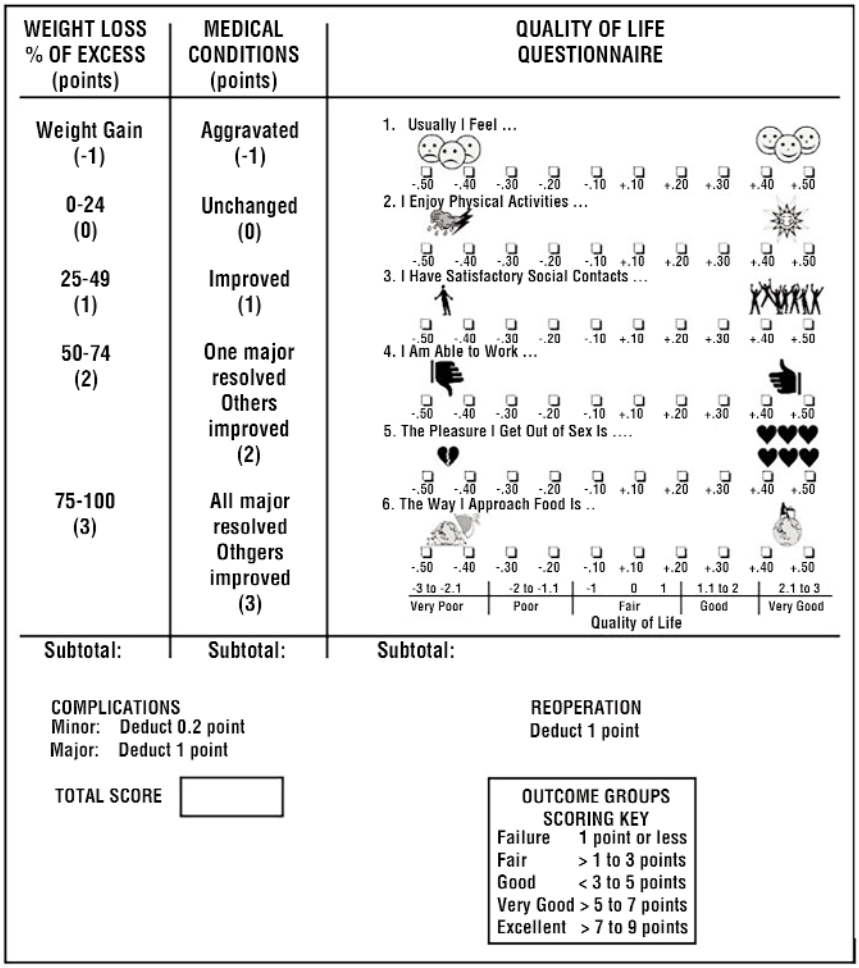

Figure 3. BAROS Questionnaire (Bariatric Analysis and Reporting Outcome System)

excess weight loss, 2) resolution or improvement of comorbidities, and 3) quality of life.

The percentage of excess weight loss (EWL) is a fundamental measure frequently cited in the literature due to its ease of calculation and clear representation. Postoperative complications were classified as either major or minor based on hospitalization duration. Complications requiring seven or more days of hospitalization were classified as major, while those requiring less than seven days were considered minor. In the questionnaire, minor complications resulted in a 0.2-point deduction, and major complications resulted in a full 1-point deduction.

Weight loss assessment was the primary criterion, with scoring as follows: weight gain or final weight exceeding preoperative levels resulted in a point deduction. No points were awarded for EWL below 24%. EWL between 25-49% earned 1 point, 50-74% earned 2 points, and EWL above 75% received 3 points.

Comorbidity resolution was the second criterion. Worsening comorbidities resulted in a 1-point deduction. If comorbidities remained unchanged, the score did not change. One point was awarded for comorbidity improvement, two points for the resolution of one major comorbidity with the improvement of others, and three points for the resolution of all major comorbidities.

The QoL component addressed self-confidence, physical activity, social interactions, occupational performance, sexual activity, and dietary habits. Simple illustrations facilitated patient responses, with each category scored on a scale from -0.5 to +0.5. After summing the points, patients were classified into five categories reflecting surgical success: excellent (>7 points), very good (5-7 points), good (3-5 points), acceptable (1-3 points), and failure (<1 point).

Comorbidities are classified as treated when they no longer require medical intervention and as relieved when there is a reduction in medication dosage. Life-threatening comorbidities, along with their diagnostic criteria, are listed in *Table 3*.

Results

Postoperative complications were categorized into two main groups, as shown in *Table 4*: major and minor complications. Among major complications, two patients experienced distal obstruction, necessitating reintervention during hospitalization. The secondary procedure involved the removal of one or two sutures. Additionally, two cases presented with esophagogastric junction obstruction, likely due to undiagnosed preoperative hiatal hernias. These patients underwent reintervention involving gastric fundus release, recalibration of the esophageal hiatus, and partial Toupet fundoplication. No gastric fistulas were observed. One patient developed upper digestive hematemesis, which was managed conservatively. Nausea and vomiting occurred in 20 patients within the first 48 hours post-surgery.

Preoperative BMI values, stratified by the presence or absence of comorbidities, are illustrated in *Fig. 4*. A Student's t-test was conducted to evaluate statistical differences between these groups. The BMI differences between patients with and without joint pain and dyslipidemia were statistically significant ($p = 0.02$ and $p = 0.0088$, respectively).

Table 3. Major comorbidities in the BAROS questionnaire

Comorbidity	Diagnostic	Resolution	Relieved
Hypertension	Systolic >140 mmHg Diastolic >90 mmHg	Diet and/or diuretics	Medically controlled
Cardiovascular disease	Signs of coronary artery disease and/or peripheral vascular disease	No treatment	Treatment still needed
Dyslipidemia	Cholesterol ´200 mg/dL, abnormal lipid profile	No treatment	Normalized with the help of medications
Type II Diabetes	Fasting glucose >140 mg/dl Glucose tolerance test ´200 mg/dL	Diet or physical activity	No need for insulin
Sleep apnea	Polysomnography pCO >45 mmHg Hb >15 mg/dL	Apnea episodes per hour: <5 Normal pCO and Hb	Apnea episodes per hour: 5-15
Osteoarthritis	Radiographic evaluation	No medical treatment	Drug-controlled
Infertility (if appliable)	Hormonal study	Pregnancy	Regular menstrual cycles

Table 4. Postoperative complications

Major postoperative complications	
Distal obstruction	2
Esophago-cardias junction obstruction	2
Minor postoperative complications	
Upper digestive hematemesis	1
Nausea and vomiting	20 (40%)

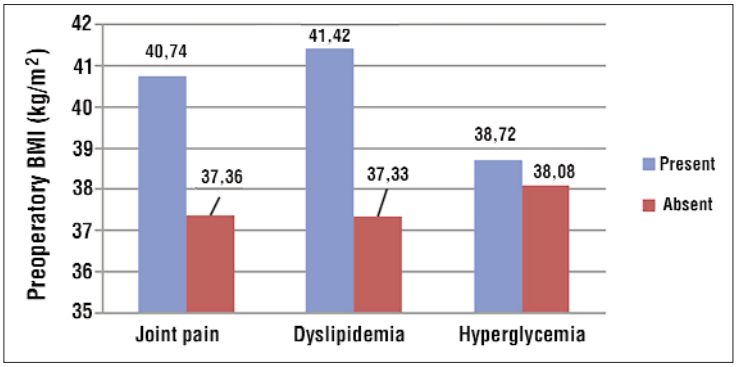

Figure 4. Average Preoperative BMI by comorbidities

Patient data on sweets consumption and physical activity were collected, enabling the comparison of postoperative BMI averages based on these habits (*Fig. 5*). A Student's t-test revealed a statistically significant difference in BMI at one year between patients who consumed sweets and those who did not ($p = 0.0105$).

ANOVA analysis was conducted to assess the correlation between excess body weight loss percentage (EBWL%) at various time points up to two years. EBWL% increased steadily until 18 months, followed by a decline at two years, with the difference deemed statistically significant ($p < 0.0001$).

Regarding BMI trends, a consistent decrease was observed over the first year, with an average reduction of 11.96 kg/m² compared to preoperative levels. From 12 to 18 months, BMI decreased slightly, followed by an increase between 18 and 24 months, reaching an average of 30.35 kg/m² (*Fig. 6*).

Pearson's correlation analysis assessed two relationships. The first examined the correlation between preoperative BMI and EBWL% at 1 to 1.5 years, showing a strong negative correlation ($r = -0.6832$, *Fig. 7*). This finding indicates higher excess weight loss at 1 and 1.5 years. The second correlation, between BAROS scores and postoperative BMI at one year, also demonstrated a strong negative relationship ($r = -0.8493$, *Fig. 8*).

A comparison of BAROS and QoL questionnaire scores with EBWL% during the first postoperative year was performed using the Mann-Whitney test. Statistically significant differences were identified for the BAROS score ($p < 0.0001$), as shown in *Figs. 9, 10*.

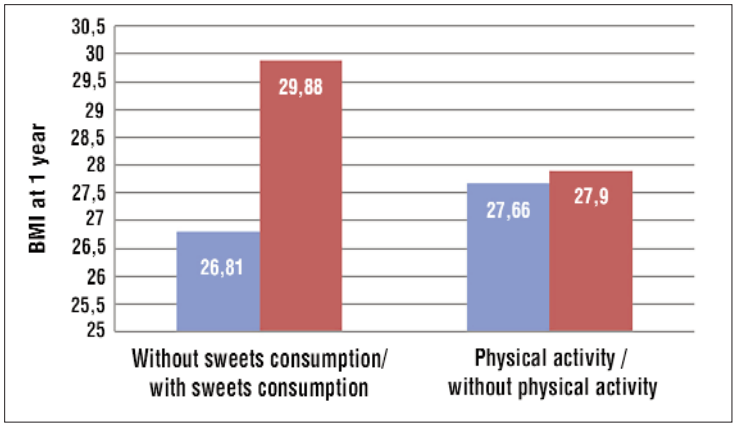

Figure 5. Average BMI at 1 year according to sweets consumption and physical activity

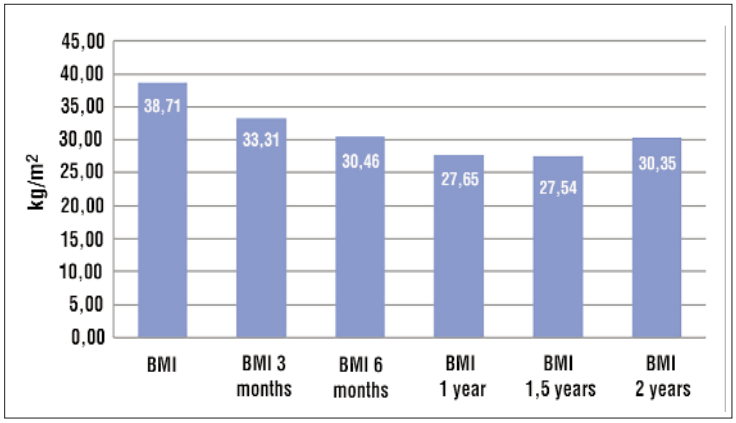

Figure 6. Average of pre- and post-operative BMI.

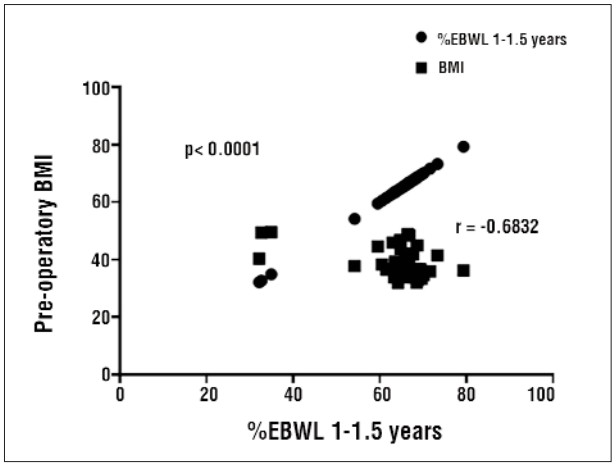

Figure 7. BMI and EBWL% correlation in the 1 - 1.5 years interval

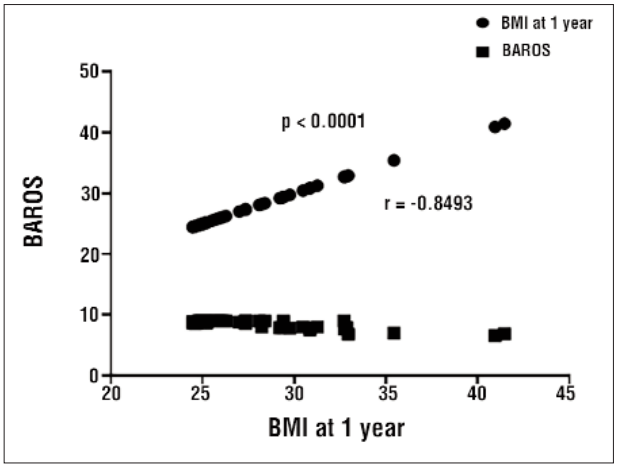

Figure 8. Correlation in between the BAROS score and post-operative BMI at one year

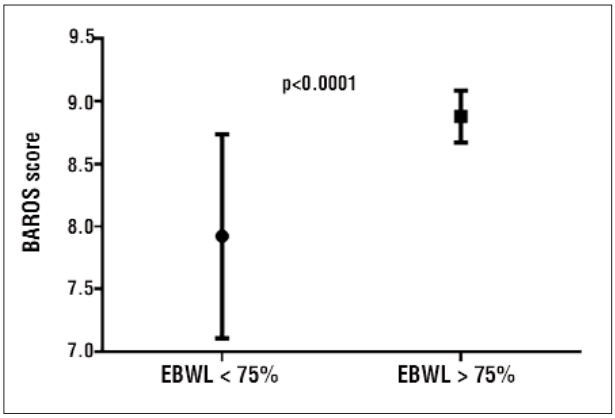

Figure 9. Average scores obtained with the BAROS questionnaire (Mean +- 95% IC) based on the EBWL% in the first post-operative year.

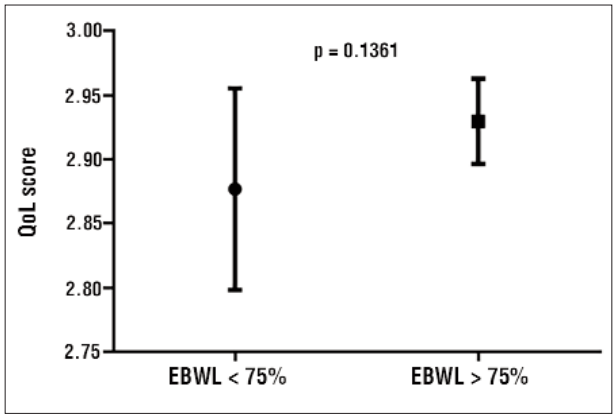

Figure 10. Average scores of the Quality-of-Life questionnaire (Mean +- 95% IC) based on the post-operative EBWL% over one year.

Discussion

Morbid obesity has reached epidemic proportions, with bariatric surgery now recognized as the most effective intervention for patients suffering from this condition (10,11). In addition to facilitating weight loss, bariatric procedures significantly improve obesity-related comorbidities, positioning them as metabolic interventions (12). Laparoscopic Sleeve Gastrectomy (LSG) and Roux-en-Y Gastric Bypass (RYGB) are the primary techniques currently performed. However, these procedures carry a range of risks and complications that can negatively impact the patient's quality of life.

LSG is effective but is associated with complications such as fistulas and worsening or new-onset Gastroesophageal Reflux Disease (GERD), with some cases progressing to Barrett's esophagus. RYGB patients may face frequent hospital readmissions due to issues like ulcers, hiatal hernias, and nutritional deficiencies. Moreover, the high cost of these surgeries limits accessibility, prompting interest in alternative, cost-effective options like laparoscopic gastroplication, especially in resource-constrained settings.

Our study investigated laparoscopic gastroplication as a treatment for obesity, evaluating its feasibility, outcomes, and postoperative quality of life. A key enhancement was the intraoperative use of the Endo Flip Device, which allowed for precise measurement and calibration of the gastric tube. Despite promising outcomes, the lack of national

insurance coverage for bariatric procedures limited the number of surgeries performed. Proper patient selection, defined by a BMI below 35 and strong psychological motivation, remains crucial for achieving optimal results.

Analysis of comorbidities related to pre-operative BMI revealed significant differences in BMI averages between patients with dyslipidemia and joint pain. However, no significant differences were observed between patients with and without hyperglycemia, likely due to the higher prevalence of diabetes among patients with morbid obesity (BMI ≥ 40 kg/m²) (13).

In terms of weight loss, patients who excluded sweets from their diet showed better results in the first postoperative year compared to those relying solely on physical activity. This finding is consistent with the work of Foster-Schubert et al. who found that dietary interventions led to greater weight loss than exercise alone in non-surgical patients (14). Our data show an average excess weight loss (EWL) of 64.43% at one year, reaching 79.31% at 18 months, with average BMIs of 27.65 kg/m² and 27.54 kg/m², respectively. However, slight weight regain occurred by the second year, resulting in an EWL of 65.13%. Studies by Ramos et al. (15), Sales (16), and Pajecki et al. (17) report similar trends of initial weight loss followed by gradual regain. Patients with preoperative BMIs below 40 experienced better EWL outcomes, aligning with Sales' findings (*Table 5*) (16). For the LSG procedure, Himpens et al. observed a 72.8% EBWL, with a similar pattern of weight regain, leading to a 6-year EBWL of 57.3% (18).

Age did not significantly influence weight loss outcomes, as evidenced by the lack of statistical significance (p=0.0810) in EWL differences between patients under and over 35 years old (*Fig. 8*). The use of the Endo Flip Device significantly improved EWL outcomes, with a statistically significant difference (p=0.0074) between patients treated with and without the device. This suggests that optimal shaping of the gastric tube contributes to improved weight loss (19,20).

Table 5. Sales study survey results

BMI	N. of patients	EBWL%
30 – 34.9	217	79.12
35 – 39.9	302	73.90
40 – 49.9	288	68.39
50 – 60	93	59.80
Total	900	70.30

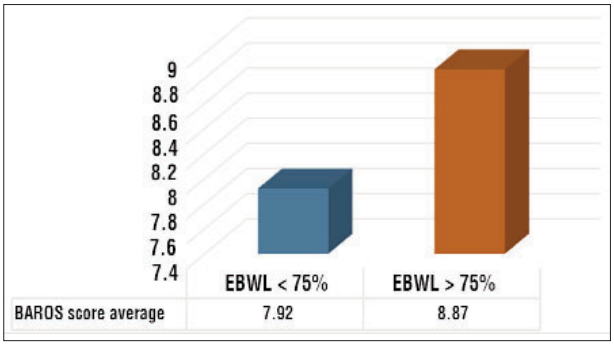

Figure 11. BAROS score averages based on EBWL%.

Quality of life (QoL), a primary objective of our study, was assessed using the BAROS questionnaire. A strong negative correlation between BAROS scores and BMI at one year was observed, indicating better outcomes in patients with lower preoperative BMIs. Patients with an EWL above 75% had significantly higher BAROS scores (8.87) compared to those with lower EWL (7.92) ($p < 0.0001$). Four patients had suboptimal BAROS scores (<7), while the majority scored between 7 and 9, reflecting excellent results (*Fig. 11*).

Similar findings were reported by Costa et al. and Puzziferri et al. who found excellent outcomes in 90% and 95% of RYGB patients, respectively (21,22). Although not statistically significant, QoL scores were higher in patients with an EWL above 70%. Preoperative BMI was also correlated with comorbidity presence, with higher BMI averages seen in patients with multiple comorbidities (42.71 kg/m²). Postoperatively, 10 out of 12 patients with hyperglycemia had reduced blood glucose levels, and all patients with preoperative joint pain reported symptom improvement within a year. Dyslipidemia resolved in 15 out of 16 patients.

Despite promising results, our study faced limitations, including a small sample size and involvement of a single surgeon, preventing the possibility of a randomized trial. Additionally, restrictive inclusion criteria limited the generalizability of the findings to a narrow subset of obese patients. Future multicenter studies with larger cohorts are needed to validate these findings and broaden the applicability of laparoscopic gastroplication as a viable bariatric option.

Conclusions

Considered a global epidemic, obesity continues to attract increasing attention, driving the development of new surgical techniques and

innovative approaches. Laparoscopic Greater Curvature Plication (LGCP) has emerged as a bariatric procedure with growing demand among obese patients. Its appeal lies in its economic viability and the fact that it does not involve gastric resection, distinguishing it from traditional bariatric surgeries.

Our results indicate that LGCP is particularly effective and more affordable option for patients with a BMI below 35 kg/m². Furthermore, combining LGCP with EndoFLIP technology optimizes surgical precision, enabling faster suturing and better control of the suturing planes. A critical factor in the long-term success of this intervention is patient adherence to nutritional plans and the determination to achieve and sustain weight loss. Consequently, this procedure is best suited for younger, motivated patients committed to following dietary guidelines and lifestyle adjustments. It also represents an option for individuals seeking alternatives to stomach resection.

Conflicts of Interest

The authors have no conflicts of intertest.

Ethical Statement

Being a retrospective study, no ethical approval was needed.

References

1. Violaine M. Obesity and overweight. PLoS Medicine Issue Image 2024; 21(6): ev21.i06.
2. Smith KB, Smith MS. Obesity Statistics. Primary Care: Clinics in Office Practice. 2016;43(1):121–35.
3. Caballero B. Humans against Obesity: Who Will Win? Advances in Nutrition, Oxford University Press; 2019. p. S4–S9.
4. Spinelli A, Buoncristiano M, Kovacs VA, Yngve A, Spiroski I, Obreja G, et al. Prevalence of severe obesity among primary school children in 21 European countries. Obes Facts. 2019;12(2):244–58.
5. Bhaskaran K, dos-Santos-Silva I, Leon DA, Douglas IJ, Smeeth L. Association of BMI with overall and cause-specific mortality: a population-based cohort study of 3·6 million adults in the UK. Lancet Diabetes Endocrinol. 2018;6(12):944–53.
6. Eiser C, Jenney M. Measuring quality of life. Arch Dis Child. 2007;92:348–50.
7. Costa JM, Soares JB. Bariatric Analysis and Reporting Outcome System (BAROS): Toward the Uniform Assessment of Bariatric Surgery Outcomes. GE Port J Gastroenterol. 2015;22(3):85-86.
8. Khaitan M, Gadani R, Pokharel KN, Gupta A. Good to excellent Quality of Life in patients suffering from severe obesity post bariatric surgery-A single-center retrospective study report using BAROS Questionnaire. J Minim Access Surg. 2022;18(2):284-288.
9. Poelemeijer YQM, van der Knaap ETW, Marang-van de Mheen PJ, Demirkiran A, Wiezer MJ, Hazebroek EJ, et al. Measuring quality of life in bariatric surgery: a multicentre study. Surg Endosc. 2020;34(12):5522-5532.
10. Still C, Sarwer DB, Blankenship J. The ASMBS Textbook of Bariatric Surgery. Springer; 2014. p. 185–186.
11. Buchwald H, Avidor Y, Braunwald E, Jensen MD, Pories W, Fahrbach K, et al. Bariatric SurgeryA Systematic Review and Meta-analysis. JAMA. 2004;292(14): 1724–37.
12. Buchwald H. The Evolution of Metabolic/Bariatric Surgery. Obes Surg. 2014; 24(8):1126–35.
13. Bays HE, Chapman RH, Grandy S. The relationship of body mass index to diabetes mellitus, hypertension and dyslipidaemia: Comparison of data from two national surveys. Int J Clin Pract. 2007;61(5):737–47.
14. Foster-Schubert KE, Alfano CM, Duggan CR, Xiao L, Campbell KL, Kong A, et al. Effect of diet and exercise, alone or combined, on weight and body composition in overweight-to-obese postmenopausal women. Obesity. 2012;20(8): 1628–38.
15. Ramos A, Galvao Neto M, Galvao M, Evangelista LF, Campos JM, Ferraz Á. Laparoscopic Greater Curvature Plication: Initial Results of an Alternative Restrictive Bariatric Procedure. Obes Surg. 2010;20(7):913–8.
16. Barranquilla CS. Gastric plication. Review of 900 cases A Bariatric Surgery reality. Semantic Scholar 2013.
17. Pajecki D, Dalcanalle L, Marques Souza de Oliveira CP, Zilberstein B, Halpern A, Garrido AB, et al. Follow-up of Roux-en-Y Gastric Bypass Patients at 5 or more Years Postoperatively. Obes Surg. 2007;17(5):601–7.
18. Himpens J, Dobbeleir J, Peeters G. Long-term results of laparoscopic sleeve gastrectomy for obesity. Ann Surg. 2010;252(2):319-24.
19. Borz C, Tivadar B, Bara T, Suciu A, Denes M, Borz B, et al. Laparoscopic gastric plication for the treatment of morbid obesity by using real-time imaging of the stomach pouch. Ann Ital Chir. 2017;88:392–8.
20. Borz MB, Borz PC, Gliga Cosma M. Sleeve gastrectomy with real time imaging of the gastric dimensions, shape and volume. ISC GRAZ.
21. Costa R, Yamaguchi N, Santo M, Riccioppo D, Pinto P. Outcomes on quality of life, weight loss, and comorbidities after Roux-en-Y gastric bypass. Arq Gastroenterol. 2014;51:165–70.
22. Puzziferri N, Austrheim-Smith IT, Wolfe BM, Wilson SE, Nguyen NT. Three-year follow-up of a prospective randomized trial comparing laparoscopic versus open gastric bypass. Ann Surg. 2006;243(2):181–8.